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Semblanzas Ictiológicas
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y
Justina Ponte Gómez

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Semblanzas Ictiológicas

Andrea Cecilia Hued

Muestreo en Santa Rosa de Calamuchita, Có rdoba, julio de 2013

Hugo L. López y Justina Ponte Gómez

ProBiota
División Zoología Vertebrados
Museo de La Plata
FCNyM, UNLP

2013

Imagen de Tapa
En Santa Fe, mayo de 2010

El tiempo acaso no exista. Es posible que no pase y sólo pasemos nosotros.

Tulio Carella

Cinco minutos bastan para soñar toda una vida, así de relativo es el tiempo.

Mario Benedetti

Semblanzas Ictiológicas

A través de esta serie intentaremos conocer diferentes facetas personales de los integrantes de nuestra "comunidad".

El cuestionario, además de su principal objetivo, con sus respuestas quizás nos ayude a encontrar entre nosotros puntos en común que vayan más allá de nuestros temas de trabajo y sea un aporte a futuros estudios históricos.

Esperamos que esta iniciativa pueda ser otro nexo entre los ictiólogos de la región, ya que consideramos que el resultado general trascendería nuestras fronteras.

Hugo L. López

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Cuestionario

-**Un libro**: Como vivido cien veces, de Cristina Bajo.
-**Una película**: Cumbres borrascosas (1992)
-**Un CD**: Falling into you (Céline Dion, 1996)
-**Un artista**: Fred Astaire
-**Un deporte**: natación
-**Un color**: naranja
-**Una comida**: pollo al ananá
-**Un animal**: caballo
-**Una palabra**: felicidad
-**Un número**: siete
-**Una imagen**: la mirada de mis hijos al nacer
-**Un lugar**: Villa Los Aromos, Córdoba
-**Una estación del año**: primavera
-**Un nombre**: dos nombres, los de mis hijos, Matías e Isabella
-**Un hombre**: Ariel Lucero (mi esposo)
-**Una mujer**: mi abuela Blanca
-**Un personaje de ficción**: Dory (de la película Buscando a Nemo)
-**Un superhéroe**: Superman

De vacaciones en Nono, Córdoba, junto a sushijos, Matías e Isabella, enero de 2013

Junto a su esposo, Ariel Lucero, y sus hijos, Isabella y Matías, mayo de 2 013

Hydrobiologia (2005) 543: 279–298
DOI 10.1007/s10750-004-7893-1

Primary Research Paper

Development and validation of a Biotic Index for evaluation of environmental quality in the central region of Argentina

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Key words: freshwater fishes, Biotic Index, environmental quality, Suquía River Basin, Argentina

Abstract

The Suquía River (Córdoba, Argentina) has become an important issue because it flows into Mar Chiquita Lake, one of the largest saline lakes in the world. This water body, together with the expansive swamps of the Dulce River on the northern shore and the mouth of Suquía and Xanaes River, is considered one of the most important wetlands in Argentina in terms of biodiversity in a range of freshwater to very saline environments. Nevertheless, the presence of densely populated urban settlements and the increasing environmental impact due to anthropogenic activities characterize the central and lower sections of Suquía River Basin. Fishes are particularly affected and change their distribution and abundance as a consequence of the environmental deterioration. We collected information on fish fauna to develop and validate a Biotic Index to assess degradation of the Suquía River Basin. We classified fish species according to their sensitiveness or tolerance to environmental degradation, based on their distribution and abundance variations along a water quality gradient in order to design a Biotic Index for Suquía River Basin. The set of metrics used in the Biotic Index calculation was conformed by: the abundance of *Astyanax eigenmanniorum, Rineloricaria catamarcensis, Gambusia affinis* and *Cnesterodon decemmaculatus,* the proportion of sensitive species richness, and the proportion of tolerant species richness. They clearly distinguished between the impaired and referenced sites. We demonstrated that it is possible to use fish as indicators of water quality in Córdoba Province (central part of Argentina) in order to carry out rapid and relatively inexpensive monitoring and conservation programs. The application of this Biotic Index showed that fish assemblages reflect the watershed conditions and are sensitive to changes in water quality across the environmental gradient.

Introduction

Human activities have altered the physical, chemical and biological processes of water resources, affecting the resident biota. Numerous studies have shown that both fish species richness and diversity decrease in polluted systems (Hildrew & Towsend, 1984; Crunkilton & Duchrow, 1991; Maret et al., 1997). Fish are sensitive indicators of the relative health of aquatic ecosystems and their surrounding watershed and manifest the ecological significance of the perturbation (Fausch et al., 1990). This premise forms the basis for monitoring fish to assess environmental degradation and ecosystem health in rivers and lakes.

Although many experimental studies have explored the response of fishes to environmental factors, fish behavior in relation to complex interactions among diverse variables in nature is difficult to describe. In Argentina there are few works that attempted to relate changes in fish assemblage composition with variations of physicochemical water characteristics in the field (Menni et al., 1984, 1996). Consequently, the aquatic system bioassess-

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Exposure to a Commercial Glyphosate Formulation (Roundup®) Alters Normal Gill and Liver Histology and Affects Male Sexual Activity of *Jenynsia multidentata* (Anablepidae, Cyprinodontiformes)

Andrea Cecilia Hued · Sabrina Oberhofer · María de los Ángeles Bistoni

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Abstract Roundup is the most popular commercial glyphosate formulation applied in the cultivation of genetically modified glyphosate-resistant crops. The aim of this study was to evaluate the histological lesions of the neotropical native fish, *Jenynsia multidentata*, in response to acute and subchronic exposure to Roundup and to determine if subchronic exposure to the herbicide causes changes in male sexual activity of individuals exposed to a sublethal concentration (0.5 mg/l) for 7 and 28 days. The estimated 96-h LC_{50} was 19.02 mg/l for both male and female fish. Gill and liver histological lesions were evaluated through histopathological indices allowing quantification of the histological damages in fish exposed to different concentrations of the herbicide. Roundup induced different histological alterations in a concentration-dependent manner. In subchronic-exposure tests, Roundup also altered normal histology of the studied organs and caused a significant decrease in the number of copulations and mating success in male fish exposed to the herbicide. It is expected that in natural environments contaminated with Roundup, both general health condition and reproductive success of *J. multidentata* could be seriously affected.

Freshwater ecosystems can be contaminated with agrochemicals by leaching, run-off, or direct or indirect spraying, this latter occurring by action of the wind (World Health Organization [WHO] 2005). Agrochemical products that get into natural waterways could exert detrimental effects on fish populations and other forms of aquatic life and may cause long-term effects in the environment (Martínez and Côlus 2002).

One of the most commonly applied herbicides in the world is the nonselective, postemergence herbicide, glyphosate (N-[phosphonomethyl] glycine). It is commercialized in >100 countries around the world, with Roundup (Monsanto) being the most popular formulation (Cox 2004). Roundup inhibits plant growth, through interference with the production of certain essential aromatic amino acids, by inhibiting the enzyme enolpyruvylshikimate phosphate synthase (Williams et al. 2000). Roundup shows high water solubility, varying from 10,000 to 15,700 mg/l at 25°C, and contains glyphosate as the active ingredient; polyethoxylene amine (POEA), a nonionic surfactant, is added to increase efficiency of the active ingredient by promoting penetration of the herbicide through plant cuticle (Burger and Fernández 2004; Brausch and Smith 2007). Due to cultivation of genetically modified glyphosate-resistant crops, the use of glyphosate has increased during the last years raising again concerns regarding the potential environmental impact of this herbicide (Giesy et al. 2000). In Argentina, soybean is the most important crop, with a planted surface that has increased by 11,000,000 hectares and a production of approximately 35,000,000 metric tons (95% correspond to glyphosate-resistant soybean) (Pengue 2005). Perusso et al. (2008), who determined the levels of glyphosate in water (0.1–0.7 mg/l), sediment (1.15–1.38 mg/l), and soil (0.53–4.45 mg/l) from transgenic soybean cultivations in Argentina, pointed out that rain events play a notable role in pollution, transporting the glyphosate present in the soil toward the water stream through the mechanisms of dilution or drift of to the surface material through run-off.

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ProBiota

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